

ThermaServe Inc.

Mechanical Systems Services

Columbia County Board of Commissioners

08/07/08

135 N.E. Hernando Ave.
Lake City, FL 32056-1529

**Re: Proposal for Chiller Plant Upgrades for the
Colombia County Courthouse (Revised for Sates Tax Savings)**

Dear Sirs,

We have inspected the existing chiller plant configuration and the original design characteristics of the plant. We have also inspected the two Carrier rotary chillers and logged their operating conditions during a peak building load. Additionally, we have interviewed the facility maintenance staff as to the operation of the chillers during mild cooling loads. Based on these observations, we are submitting this cost proposal to make upgrades to the chiller plant that will result in significantly lower energy costs.

Summary of ThermaServe Inc. findings:

- Both chillers we originally designed to deliver 350-tons of cooling capacity each. Each chiller was logged under an approximate 90% building load (90° ODB and 79° OWB with courtrooms occupied) and this load was calculated to be at 196-tons. If we were to add 10% to 20% for a 95° to 100° day, the building load would be around 216-tons to 235-tons. These conditions support the deduction that a chiller or chillers of less capacity could be used to meet the cooling requirements of the building and operate at a significantly improved energy efficiency.
- Chiller #1 has been previously retrofitted with an alternate refrigerant in an effort to reduce the chillers capacity. This was done for the reason to reduce the operating time of the hot gas bypass system. We also found this chiller to be the least energy efficient chiller of the two with an approximate .76 kW/Ton. Chiller #2 was operating at .645 kW/Ton.
The use of hot gas bypass significantly worsens the efficiency of the refrigeration systems when needed to keep the chiller online in lower than design cooling periods.

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ThermaServe Incorporated Solution

We propose to make improvements to the existing chiller plant that will save significant energy cost.

Project Scope:

- The replacement of Chiller #1 the most poorly performing nominal 350-ton rotary chiller with a new 250-ton York chiller using variable speed centrifugal compressor technology. The new chiller will operate at .62 Kw / Ton at 100% capacity and .415 Kw / Ton IPLV and use refrigerant R-134a with a non-ozone depleting potential.
- Retrofit the existing condenser water pump serving Chiller #1 with a new impeller to deliver only the required flow for the new 250-ton chiller. This will reduce the required horsepower of this pump and reduce the pumping energy consumed.

The total cost for the ThermaServe Inc. solution is \$176,970.00*.

- > Based on the previous year energy cost data provided by The Columbia County Board of Commissioners plus the planned FP&L increases of 10% per year, beginning in August thru December of 2008 we are projecting a project payback of \$180,317.00 over a four year period.
(Copies of the operating cost analysis are attached.)

Clarification: All electrical and BAS controls work is to be by others.

* If the Columbia County Board of Commissioners would like to direct purchase the ThermaServe Inc. selected chiller and save the sales tax the total project cost would be \$170,221.00. A purchase order for the amount of \$96,420.00 would be made out to Applied Mechanical Equipment for the York chiller.

Thank you for this opportunity,

Respectfully,

Scott D. Royer

Scott D. Royer
President

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